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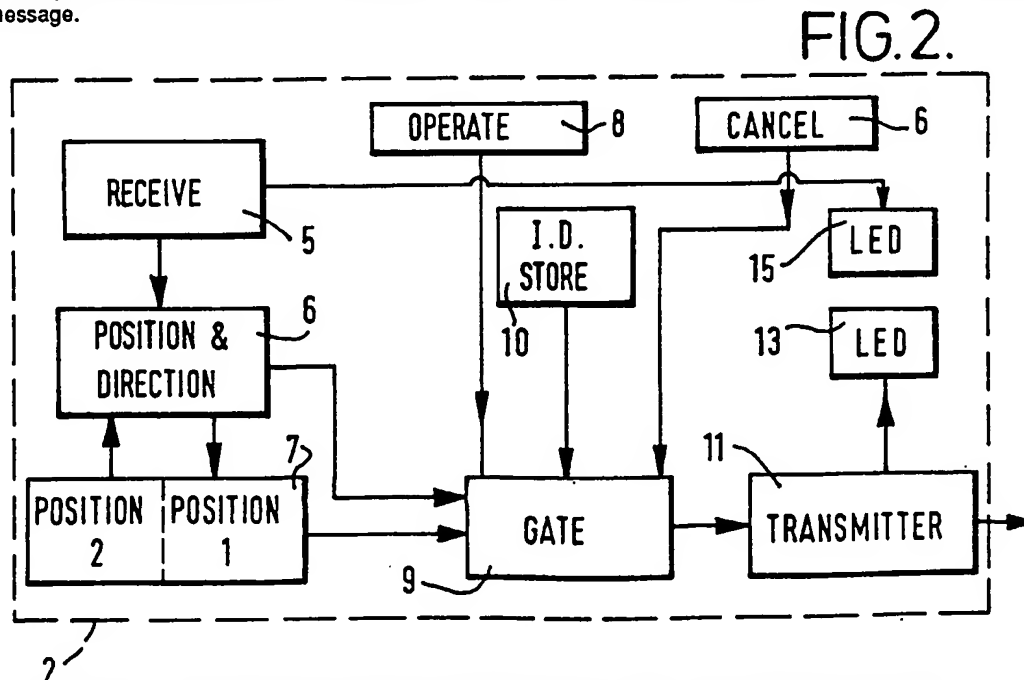
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(54) **Location determining and transmitting arrangement**

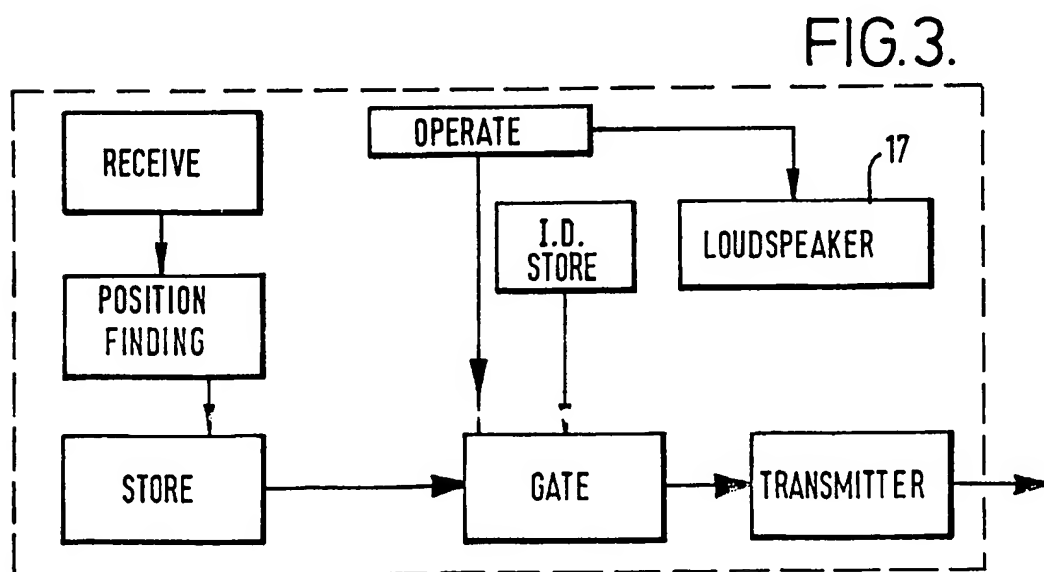
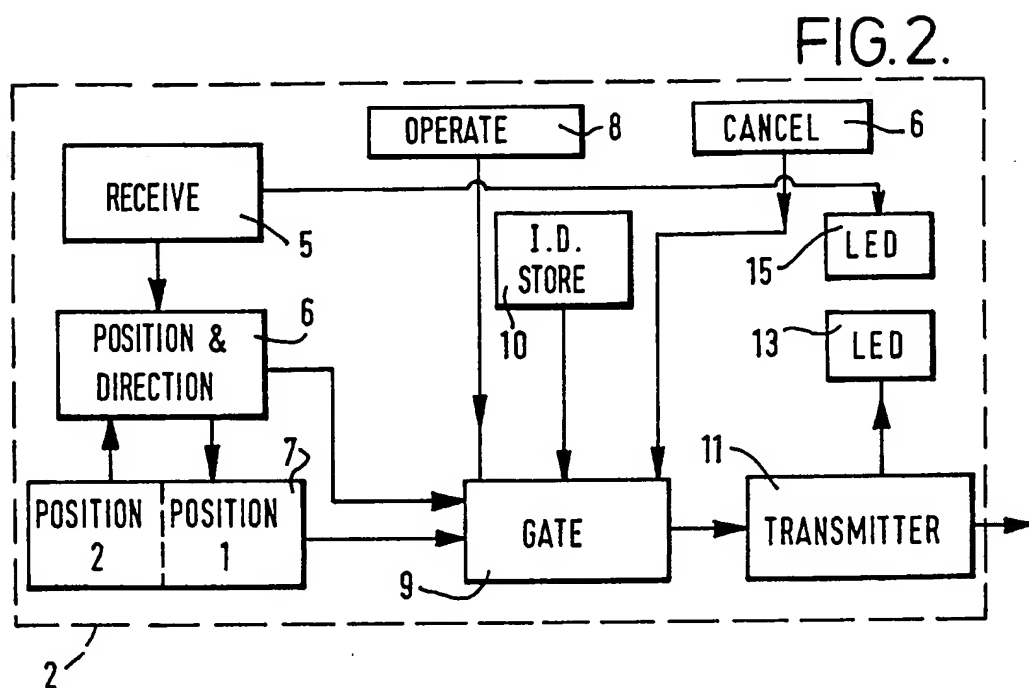
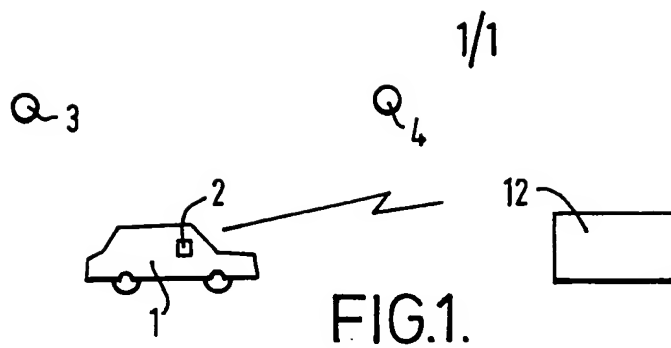
(57) An arrangement for determining the location of a person or object such as a vehicle comprises a module 2 including means 5, 6 such as a satellite navigation receiver, for determining the position of the vehicle. The position, and a previous position are then stored at 7. If the occupants of the vehicle wish to summon assistance, button 8 is activated which causes details of the position of the vehicle and identification information from store 10 to be transmitted by transmitter 11 to a remote base station via a mobile telephone system. Simultaneously with this, a visual indicator 13 is illuminated to show the occupants that the transmission has been made.

On receipt of the message from the vehicle an acknowledgement is transmitted and illuminates an indicator 15 in the module 2. Cancel button 16 permits cancellation of the message.



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

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### Location Determining Arrangement

This invention relates to an arrangement for determining the location of a person or object and more particularly to the transmission of the positional information to a base station remote from said object or person.

If a vehicle breaks down, the driver, unless he possesses a car phone or radio transmitter, must leave it to summon assistance. The driver may be concerned about the possibility of being attacked or assaulted when he does this, particularly if the vehicle has broken down in a remote location or on a motorway.

The present invention arose from the consideration of this problem but it is believed that it also has other applications.

According to the invention there is provided an arrangement for determining the location of an object or person comprising means for determining the position of said object or person and means for transmitting data

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representative of the determined position to a remote base station via a mobile telephone system, both aforesaid means being adapted to be carried by said object or person.

Thus, if equipment in accordance with the invention is carried on a vehicle for summoning assistance in the case of a breakdown, the driver is able to summon help without needing to leave his vehicle. As his position may be determined without the intervention of the driver, a breakdown service or other rescue organisation which receives the signal at the base station obtains accurate positional information even if the driver is unsure of his position.

Although it is envisaged that the invention would be particularly applicable to the case of summoning assistance to the occupants of vehicles, it may also be advantageously used for people involved in other activities such as mountain walking or jogging, for example.

An arrangement in accordance with the invention may be implemented at relatively low cost as it may use already existing position fixing systems and mobile telephone systems. The means for determining the position preferably utilises a signal transmitted by one or more

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beacons to fix the location. One or more of these beacons may be a satellite.

Some ways in which the invention may be performed are now described by way of example only with reference to the accompanying drawings, in which:

Figure 1 schematically illustrates an arrangement in accordance with the invention;

Figure 2 shows part of Figure 1 in greater detail; and

Figure 3 is a schematic block diagram of another arrangement in accordance with the invention.

With reference to Figure 1, a vehicle 1 is equipped with a module 2, shown in greater detail in Figure 2, which is capable of receiving signals from satellites 3 and 4 at a receive circuit 5. The received signals are transmitted from circuit 5 to a position fixing circuit 6. This processes the received signals to give an indication of the instantaneous position of the vehicle with an accuracy of about 100 metres.

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The calculated position is applied to a store 7. The position of the vehicle is determined at regular intervals, of say, 10 minutes or so, and the two most recent positions maintained in the store 7. When two position readings have been taken, the circuit 6 uses them to provide an indication of the direction of travel of the vehicle 1.

If the vehicle breaks down, and the driver requires assistance, he operates a button 8 which causes a gating circuit 9 to be activated. The circuit 9 accesses the latest position from store 7 and details of the direction from the circuit 6 and also accesses the data from an identification store 10 which holds, say, the driver's membership number of a car breakdown organisation. This data is passed by circuit 9 to a transmitter 11 and is transmitted to a rescue organisation 12 via the cellular phone system.

As the data is transmitted by transmitter 11, an LED 13 is activated to indicate to the operator that the information has been sent. On reception of the transmission by the rescue organisation at 12, an acknowledgment signal is transmitted to the vehicle 1. The signal received at 14 is used to illuminate another LED 15 so that the occupant is informed that his message has been received and understood.

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The module 2 also includes a cancelation button 16 which the vehicle occupant can operate should he no longer require assistance or if the request for assistance had been made in error. The activation of the button 16 causes a cancellation code to be transmitted via the gating circuit 9 and transmitter 11.

The membership details held in store 10 may be arranged to be alterable by the occupant of the car so that additional information may be included. For example, the driver may wish to show that he is alone in the car.

The module shown in Figure 2 is dedicated for making a connection with one particular rescue organisation. However, it may be more complex and include means for selecting one of a plurality of rescue services to be contacted. For example, it may also include a button for summoning assistance from medical services.

The module of Figure 2 can be further modified by including a keyboard which enables simple additional messages, for example indicating the nature of the problem, to be added to the positional and identification data.

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With reference to Figure 3, a module which is particularly suitable for use by pedestrians, say, who are concerned about the possibility of assault, is similar to that illustrated in Figure 2. However, information about only one position is stored at any time and there is no circuit for determining the direction of travel. The module includes a loudspeaker 17 which is activated when button 8 is depressed so that, as well as summoning assistance, the module acts as a personal alarm to frighten any attacker away. For this type of use, the cancel button 16 is also omitted.

Although the modules illustrated in Figures 2 and 3 are intended for use with receiving positional information using satellite signals, they could, of course, use other forms of position fixing beacons and could be adapted to use signals from more than one type of source.



CLAIMS

1. An arrangement for determining the location of an object or person comprising: means for determining the position of said object or person and means for transmitting data representative of the determined position to a remote base station via a mobile telephone system, both aforesaid means being adapted to be carried by said object or person.
2. An arrangement as claimed in claim 1 wherein the means for determining the position and means for transmitting data are combined within a common module.
3. An arrangement as claimed in claim 1 or 2 wherein the means for determining the position utilises a signal transmitted by one or more beacons.
4. An arrangement as claimed in claim 3 wherein at least one beacon is a satellite.
5. An arrangement as claimed in any preceding claim and including means for transmitting identification data relating to the object or person together with the positional data.

6. An arrangement as claimed in any preceding claim and including means for an operator to include additional information to be transmitted with the positional information.

7. An arrangement as claimed in any preceding claim and including storage means for storing the positional data prior to transmission.

8. An arrangement as claimed in claim 7 wherein the storage means is capable of storing data relating to the position of the object or person at different times.

9. An arrangement as claimed in claim 8 including means for determining the direction of travel of the person or object using the stored positions.

10. An arrangement as claimed in any preceding claim and including means for transmitting positional data to one or more of a plurality of base stations.

11. An arrangement as claimed in any preceding claim and including means for indicating to an operator that the positional data has been transmitted.

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12. An arrangement as claimed in any preceding claim and including means for indicating to an operator that a signal has been received, from the base station which acknowledges receipt of the transmitted positional data.

13. An arrangement as claimed in any preceding claim and including means for transmitting a cancellation signal to the base station.

14. An arrangement as claimed in any preceding claim and including an available alarm activated when the positional data is transmitted.

15. An arrangement for determining the location of an object or a person substantially as illustrated in and described with reference to Figures 1 and 2 or Figure 3 of the accompanying drawings.